

ENGINEERING MANAGEMENT SUPPORT INC.

7220 West Jefferson Avenue, Suite 406
Lakewood, CO 80235

Telephone (303) 940-3426
Telecopier (303) 940-3422

April 24, 2015

VIA: Electronic Mail


Mr. Bradley Vann
U.S. Environmental Protection Agency
Region VII SUPR/MOKS
11201 Renner Boulevard
Lenexa, KS 66219

**SUBJECT: Responses to EPA 4-3-15 Comments on the March 20, 2015
“Phase 1D Investigation - Additional Characterization of Extent of
Radiologically-Impacted Material in Area 1 - Addendum to Phase 1
Work Plans for Isolation Barrier Investigation
West Lake Landfill Operable Unit-1, Bridgeton, Missouri”**

Dear Mr. Vann,

On behalf of Cotter Corporation (N.S.L.), Bridgeton Landfill, LLC., Rock Road Industries, Inc., and the United States Department of Energy (the “Respondents”), Engineering Management Support Inc. (EMSI) submits the subject responses to comments. If you have any questions, please do not hesitate to contact me.

Sincerely,
ENGINEERING MANAGEMENT SUPPORT, Inc.



Paul V. Rosasco, P.E.

Distribution:

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**Responses to U.S. Environmental Protection Agency (USEPA) Comments on the
March 20, 2015 “Phase 1D Investigation - Additional Characterization of Extent of
Radiologically-Impacted Material in Area 1 - Addendum to Phase 1 Work Plans for
Isolation Barrier Investigation
West Lake Landfill Operable Unit-1, Bridgeton, Missouri”
(Work Plan Addendum)**

1. **Pages 1-2, Scope of Work and Objectives of Investigation** - This section of the Work Plan Addendum needs to more clearly state that this investigation broadens the scope of the originally designed Phase 1 investigation such that in addition to collecting data for purposes of identifying potential locations for an isolation barrier, the scope of this work plan also includes fully identifying the extent of RIM contamination to the south and west of the previously defined boundaries of Operable Unit 1, Area 1.

Response: *The discussion of the purpose and objectives of the Phase 1D investigation has been expanded to indicate that it is being conducted to further delineate the extent of RIM in Area 1 as well as provide data relative to possible locations for a potential thermal isolation barrier.*

2. **Pages 3-5, Field Investigation and Sample Collection and Analyses** - The work plan shall provide for RIM characterization south and west of Area 1 to be complete with this pending round of fieldwork. The work plan shall describe how the PRPs will perform additional bounding sampling near elevated locations to determine whether or not contamination extends outside these areas as discussed during the technical conference with EPA personnel on January 23, 2015. This includes establishing a no-Radiologically Impacted Material (RIM) boundary as defined in Section 1.1.1 "Bridgeton Landfill - West Lake Landfill Core Sampling (Phase 1B, 1C, and 2) Work Plan - Revision 1 (January 8, 2014) and performing additional sampling southward towards the North Quarry area and west of the original boundary of Area 1 to determine the extent of RIM in this area. The document also needs to clearly state that additional sampling beyond these 14 locations will occur if additional RIM is located, as the intent of this field mobilization is to define the extent. The text of the work plan shall indicate that this effort will be completed in one continuous field mobilization, with samples sent to the laboratory in batches as they are collected and with the borings being gamma-logged as soon as they are completed.

The work plan shall also describe how the proposed additional sampling, along with historical sampling results in this area, provide sufficient support for a risk-based

statistical analysis of the extent of RIM, as discussed in the technical meeting on January 23, 2015.

Response: *The Addendum has been revised to include discussions of the intent and objective of the Phase 1D investigation to complete the bounding of RIM in the southwestern and western portions of Area 1. The text has also been revised to indicate that if needed, additional borings may be drilled to complete the delineation of the extent of RIM. The text has been revised to clearly state that samples will be sent to the laboratory in batches rather than at the end of the drilling and sampling phase of work.*

The prior discussion of the potential use of the data for performance of risk calculations has been expanded to indicate that the results of the investigations are anticipated to provide sufficient data for statistical based estimates of reasonable maximum exposure (RME) concentrations (i.e., 95% upper confidence limits) that may occur from exposures to RIM in Area 1 or exposures to RIM located outside of a possible thermal isolation barrier that may be affected by a subsurface smoldering event.

3. **Pages 3-5, Field Investigation and Sample Collection and Analyses** - The work plan shall identify a clear process for decision making while in the field for further investigation without another mobilization if RIM is found in the targeted investigation locations. The EPA expects sampling to begin along the points located north and south of 1971/1975 topographic intersect to confirm presence or absence of RIM (i.e., no-Rim boundary) and then proceed to the other points from that demarcation. The EPA understands from our discussions that the responsible parties do not anticipate RIM to be encountered at these locations and beyond. Regardless, prioritizing these GCPT and/or sonic borings for completion affords field personnel time to strategize and potentially secure other drilling equipment or perform the necessary logistical access work for the drilling equipment, if needed, should RIM be encountered at these points and require sampling farther south. Please amend the text clearly identifying investigation strategy and priority, accordingly.

Response: *A description of the process to be used to determine if additional borings may be needed and to obtain EPA approval for additional borings has been added to the Addendum. Additional text has been added to the Addendum to indicate that subject to possible drill site preparation or ongoing landfill operations and maintenance activities, the southernmost boring locations will be drilled first to provide information on RIM distribution in this area early on in the investigation.*

4. **Pages 3-5, Field Investigation and Sample Collection and Analysis** - The work plan shall be modified to indicate that all field adjustments in sampling locations and methods require EPA approval, and at a minimum coordinated by teleconference, email or with the EPA representative onsite.

Response: *Text has been added indicating that EPA approval will be obtained prior to performance of any additional borings or adjusting any of the proposed boring locations.*

5. **Pages 3-5, Field Investigation and Sample Collection and Analysis** - The work plan indicates that a bottom sample will be obtained at the point where the GCPT readings return to normal. The work plan should specify that this is expected to be the bottom of the impacted area and below clean-up levels, even if there is refusal or if field personnel hit the formation below the landfill (not necessarily in waste) to ensure you have captured this bounding data.

Response: *Text has been added to indicate that in the event that the GCPT gamma scan or the downhole gamma logging of the Sonic boreholes do not provide a clear basis for determination of the base of RIM at a location, a sample(s) will be collected and submitted for laboratory analysis and the resultant data will be used to define the lower limit of RIM occurrences at the particular location.*

6. **Pages 3-5, Field Investigation and Sample Collection and Analysis** - The text on pages 2 and 5 of the work plan discussing the sampling process and use of the identification of Potassium-40 in the gamma signature for identification of municipal solid waste versus RIM should be expanded. The work plan should more thoroughly describe how the differentiation will be made between radiological contaminants from a RIM source versus non-RIM/naturally occurring sources. The PRPs should consider and address in the work plan how the ratios of activity levels of radium may also be of use in this differentiation.

Response: *The discussion of the methods to be used to differentiate possible RIM from possible occurrences of radionuclides in non-RIM municipal solid waste has been expanded.*

7. **Data Quality Objectives** - The work plan shall include appropriate modifications to the Data Quality Objectives described in the January 2014 Core Sampling Work plan - Revision 1 to comport with the broader scope of this investigation addendum. Those modifications should be described in the revised work plan. The DQOs should specify how to differentiate radiological contaminants from a RIM source versus non-

RIM/naturally occurring sources. In addition the DQOs should support a risk-based statistical analysis of data associated with the extent of RIM, as identified in comment 2 above.

Response: *The text has been modified to indicate the additional/broader objective of the Phase 1D investigation, differentiation of gamma radiation and radionuclide occurrences from RIM and non-RIM materials, and the use of the resultant data to support statistically-based risk assessment evaluations.*

8. **Page 4, paragraph 6, first sentence** - (editorial correction) Please change "radioanalyses" to "radiological analyses".

Response: *The requested change has been made.*

9. **Pages 5-6, Reporting** - The work plan should indicate that upon completion of all Phase 1D field work and receipt of validated data, a comprehensive final report will be submitted. The work plan should indicate that the comprehensive final report will include a conclusion section as well as revised figures and maps that accurately depict and incorporate relevant site information (both historical and based on recent sampling results around OU1, Area 1 as some of the historical RI boundaries are now obsolete.) This final report is in essence a Remedial Investigation addendum that should fully capture all relevant investigation information performed to date and should update the conceptual site model with regards to RIM in OU1. The final report will be used in the preparation for the revised Supplemental Feasibility Study Report. Please amend the text where relevant and identify this expectation, accordingly.

Response: *The text has been modified to indicate that two reports will be prepared, including a Phase 1D data report and a comprehensive Phase 1 investigation report. Both of these reports will present an update to the extent of RIM in Area 1; however, as noted in the text, the final determination of the extent of RIM above the cleanup levels EPA has associated with the "complete rad removal" alternatives will be performed as part of the Supplemental SFS report in conjunction with a re-evaluation of the volume of RIM that could be removed as part of a "complete rad removal" alternative. As previously discussed with EPA, the evaluations presented in the SFS will take several months to complete. Therefore, in order to complete the Phase 1 investigations and reporting as soon as possible, such evaluations are not proposed for inclusion in the Phase 1D investigation or comprehensive Phase 1 report.*

10. **Pages 5-6, Reporting** - This list should also include copies of field notebooks if applicable in addition to the daily field logs. In addition, please specifically include in this list worker and work area related health and safety air monitoring results from the Thermoluminescent Dosimeter Monitors (TDMs); daily personnel radiation surveys, and four gas monitors.

Response: *The reporting list has been developed and will be included in the Phase 1D and comprehensive Phase 1 report. The list, which includes the types of information specifically listed in this comment, has been included in the Addendum. Please note that based on discussions with the field personnel and Bridgeton Landfill health and safety personnel, it is not possible to provide results from the four gas meters that are specifically associated with the Phase 1D or the prior Phase 1 investigations. The four gas meters are used by the field crew to provide an alarm in the event that an action condition, such as an exceedance of the lower explosive limit, were to occur. Although the meters record the readings at continuous intervals, these readings are only downloaded quarterly. During any given period, contractor employees may be involved in Phase 1 investigations, work at the leachate treatment facility, work with the Bridgeton Landfill landfill gas control system, or other work associated with Bridgeton Landfill or OU-1. In addition, for some of the contractors, the units are not assigned to a particular individual but rather are available for check out by any contractor personnel for any work performed at the Bridgeton/West Lake Landfills.*

11. **Page 6, Schedule** - The work plan must provide for a specific completion date calculated from the date of approval of the work plan. The planned completion dates for the list of generalized tasks shall also be calculated from the date of approval of the work plan. While the EPA understands such schedules are dynamic and subject to change based upon conditions in the field, the agency expects this schedule to be maintained throughout this effort. Updates on the work progression shall be provided within weekly and monthly reports, or earlier in the event of a significant work delay. If an extension of time is needed for final completion of the fieldwork or submission of the final report, the PRPs shall seek approval for such an extension from the EPA.

Response: *The schedule of the anticipated durations of the various activities has been modified to include projected calendar dates based on an assumed date of receipt of EPA approval to proceed of May 4, 2015. Please note that this schedule may be subject to change based on the actual date of approval to proceed, driller availability, field conditions, and preliminary investigation results.*

12. **Page 7, Project Team** - This section discusses providing the GCPT logs to P.J. Carey & Associates for geotechnical property evaluation and future consideration of IB

construction but will not include them in the report, as it will instead rely on the geologic logging and core samples. Regardless of interpretation or text reference, the EPA expects any field data collected during this effort to be included as an appendix to the final comprehensive report. Please revise this section of the work plan accordingly.

Response: *The language in the Addendum has been clarified to indicate that in order to expedite release of the Phase 1D investigation results, the interpretation of the cone penetrometer (CPT) data will not be included in the Phase 1D report; however, interpretation of the CPT data will be included in the comprehensive Phase 1 report.*

13. **Figure 1 Legend** - Map key shows symbol as Phase 1D Boring Locations (black and white boring symbols), which are actually completed historical borings. Please revise the figure key accordingly.

Response: *The legend to the figure has been corrected.*